BLASTMAN Vision

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The grand vision of the BLASTMAN project is to compile in one place the data that will satisfy the accelerator modeling needs of the Fermilab complex. This includes a description of the machine lattices, the assignment of specific magnets to the defined locations, magnetic data on each magnet, repair status of spare magnets, and associated alignment data. Other relevant ancillary data will be included, such as magnet quench performance, especially information that may come into play in choosing a replacement magnet. The database will document not just the current state of the machines, but will also record previous states. The system will provide for the maintenance of the information and for extraction of desired information by non-specialists.

The primary source of information about all of these factors is stored elsewhere. The machine lattice definitions, at least the ideals, are built by machine designers and store in files. The identity of the magnet at each location is store in FAMIS and in Dave Augustine's database. Magnetic measurements (and quench data) originate at Magnet Test Facility. Repair status is controlled by TD/E&F. Alignment data is the responsibility of the Alignment and Metrology Group. While would be technically possible for each of these data sources to build a database that would provide access to the necessary data, only requiring BLASTMAN to maintain the appropriate links, it is not feasible in the near to intermediate future. Instead, tools will be provide for updating BLASTMAN with copies of relevant data in a sufficiently convenient fashion so as to encourage maintenance.

Although there are frequent (every few years) suggestions that all magnet information be integrated into a single, massive database, on mature consideration people generally agree that this is unrealistic and probably not even a good idea, given the disparate nature of the information stored. The closest anyone has come to bringing together the fraction of the total information that is useful for accelerator physics and operational purposes is RIM database maintained by Norman Gelfand. Although his database has not drawn in other accelerator systems, it has been very useful for the Tevatron, and is therefore a logical starting point for building a general system.

The current migration and extension project is defined in three phases, of which CD has so far agreed to support the first two. Phase 1 is a simple direct migration of the RIM database to a modern platform, Sybase, making appropriate provision for incoming alignment data from the latest survey of the Tevatron. This includes documenting the database, defining the tables, copying the data, validating the data, and providing a set of access tools for maintaining and retrieving the data. This is straightforward for the parts of the RIM database that are well-exercised, but less well defined for the alignment data. Phase 2 is primarily refurbishing the database schema, including the provision of more transparent names, elimination of redundant copies of data, pruning of unused tables, and provision of appropriate access tools. Phase 3 consists of incompletely defined enhancements to the system that will imbue even more general usefulness.

Any additions to the system for Phase 3 need to be discussed more broadly by representatives from the various accelerator systems as well as the local accelerator physics community and the providers of the information. Suggestions for additional information have included a lattice definition table to allow easy sorting of locations in an order other than alphabetic, dynamic magnet measurements, magnetic field representations other than a harmonic decomposition, detailed excitation curves, a more detailed quench performance description, generic magnet data for use where no individual data is available or where the generic data is more reliable, enhanced configuration management to support multiple operating conditions of the same magnet lattice, BPM calibration data, ideal lattice and other alignment information.